

UNITED STATES DEPARTMENT OF AGRICULTURE

Extension Service  
Washington 25, D. C.

THE PLACE OF LIVESTOCK IN EASTERN AGRICULTURE  
AND SOME RELATED PROBLEMS

by

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at Jackson's Mill, W. Va., June 1948

The Eastern part of the United States has a topography which in comparison with that of the Midwestern States requires a larger proportion of its agricultural lands to be in grass and hay crops. Because of the large part of our country's population that lives in the East, markets are at hand for more livestock products than can be produced in the territory. We are certainly safe in assuming that a market is close at hand for all the livestock products that can be produced in this territory.

With this preface to the subject assigned I would prefer to spend most of my time on related problems.

There are some fundamentals that need major consideration in a livestock philosophy the country over.

Cutting costs of production is always constructive. I hope to discuss with you some tests that will be helpful in adapting feed supplies to the territory.

Supplies of livestock, especially cattle and sheep, offered on our markets fluctuate more than demand. The fact that we are located in territory where we annually have winter when grass does not grow and summer when grass does grow causes a great difference in beef cattle receipts at our markets between April and October. The Corn Belt or grain-feeding livestock farmers buy much of the heavy or surplus supplies in the fall and carry them on grain for the winter and spring months when "grassers" are not available. A study of prices of common, medium, and choice grades of cattle on our markets shows the spread between choice and common steers to be twice as wide in October as it is in May. We saw this season a very narrow margin between the various classes of cattle in early May and saw those classes widen in their market prices during the past month, and they will doubtless widen more as the summer season advances.

Livestock producers can and should capitalize on that situation as best they can. Their own farm feed supplies are a major factor in determining the best course to follow.

There is no one best formula for all.

The group represented here is for the most part from territory where grass predominates. That means first of all a livestock production territory — territory where breeding herds are maintained and livestock numbers increased.

It means cattle and sheep are preferable to hogs, because their digestive apparatus is made to handle grass and hay while the hog has a digestive apparatus geared to handle concentrates.



The livestock producer of this territory may have enough grain to finish his animals for market or he may need to sell his surplus as feeders for someone else to finish.

You may be interested in some of our acre returns from different crops when measured in pounds of gain on steers.

- (1) Excellent corn land in permanent bluegrass pasture has given us about 200 pounds of gain on yearling steers for the grazing season from an acre of pasture.
- (2) Similar land in rotation has given us about 400 pounds of gain on steers when the corn was husked, cribbed, and fed as grain.
- (3) Similar acres of corn put through the silo have given us 600 pounds of gain on similar steers per acre of corn fed.

The gains on cattle fed either silage or corn through the crib are a grade or two higher in carcass quality than were the gains of the grass cattle referred to above. That situation ordinarily exists. The cattle from the feed lot went to market at a time when grass cattle were not available. Grains can be stored more easily than live animals; hence our grain crops serve a major purpose in helping to spread our season of marketing.

The foregoing is not mentioned as an appeal to plow land that erodes to put it into corn. It is mentioned so that you can capitalize on the situation to the best possible advantage.

The cattleman who can feed some corn on grass is usually very well repaid for his corn. Five to ten bushels of corn fed per steer on pasture during the latter part of the grazing season frequently will add sufficient condition or finish to put them into a much more desirable price class on the markets.

The man who can fatten his own feeder calves is probably in a safer position than either the straight grass operator or the straight grain feeder of the Corn Belt. Where we have fattened yearling steers on a full feed of corn silage, supplement, and hay we have used 6 to 8 acres of corn to 1 acre of hay. Corn grain, supplement, and hay have used a ratio of 4 to 5 acres of corn to 1 acre of hay. Keeping a breeding herd of cows and fattening the calves on corn grain, supplement, and hay has used about 2 acres of pasture and hay to 1 acre of corn. There is enough flexibility in a beef cattle program to meet almost any crop rotation situation, from all pasture to all grain.

The fact that an acre of corn will produce twice as many pounds of gain, and that the gains are of higher quality, explains why Corn Belt farms are the highest-priced lands we have, other than the speciality lands. To be sure, more labor, machinery, and housing are required to get the gains from an acre of corn.

An acre of corn will give half again as many pounds of gain on steers if fed through a silo as compared with feeding it through a crib. However, we can't put all our corn into silos. In fact, silos are not as popular today on our larger farms as they were before the arrival of the corn pickers. True, silos serve a very useful purpose for grass silage as well as for corn, and machinery is available for making grass silage; this statement refers to those who think in terms of corn.



For 15 years, at our Madison County farm, we have fattened one lot of steers on what we call an all-silage ration. The steers, which have been yearlings weighing 625 to 750 pounds, have consumed about 50 pounds of corn silage per steer per day, 1-1/2 pounds of a protein concentrate per steer per day, and what hay they wanted, which amounted to about 3 pounds per steer daily. Over this period, the steers have gained just a shade over 2 pounds a day for feeding periods of about 5-1/2 months. It has been our most profitable steer-fattening system. It has had some serious farm-rotation handicaps, as the steers have eaten a ratio of nearly 8 acres of corn to 1 acre of hay — admittedly a lopsided rotation.

We have had some experiences over the period with good and poor corn crops. In 1936 a severe drought cut our yield to 15.5 bushels of corn and 3.7 tons of silage per acre. A ton of the silage contained 4.2 bushels of corn.

Our best yield was 83.4 bushels of corn or 11.3 tons of silage per acre. Each ton of that silage contained 7.3 bushels of corn.

It required 2,259 pounds of silage, containing 4.2 bushels of corn, per ton to put on 100 pounds of gain, while it required 2,293 pounds of silage containing 7.3 bushels of corn per ton of silage to put on 100 pounds of gain on similar cattle.

That uniformity of amount of silage to put on gains has prevailed throughout the 15 years and has given us some things to think about that are as yet unanswered. It has stimulated our thinking on the use of roughages in cattle feed lots.

At this same Madison County farm we compared shelled corn and corn-and-cob meal, along with supplement and hay, for steer calves and yearlings. We had pigs following the steers to salvage the wastes from the steers. After five tests — three with calves and two with yearlings — we had a surprisingly uniform set of results, which favored the use of corn-and-cob meal. In fact, we had nine-tenths of a pound more gain on the steers and pigs following them per bushel of corn when fed as corn-and-cob meal. Another way of stating these results was to say that 2,000 pounds of corn-and-cob meal gave us as much gain on cattle and hogs following them as 1,800 pounds of shelled corn. The ton of corn-and-cob meal contained 1,600 pounds of shelled corn and 400 pounds of cobs. The cobs were worth half their weight in shelled corn. That is a good-sized statement.

A good question that arose as a result of those tests was whether the accepted ratio of 56 pounds of shelled corn to 14 pounds of cobs was the best ratio to make a corn-and-cob meal for use in a steer fattening ration.

Six years ago we started a series of tests in which we compared ground shelled corn, regular corn-and-cob meal, and a corn-and-cob meal that contained twice as many cobs as the regular corn-and-cob meal. We used 2 pounds of soybean oil per steer per day. That amount we considered a generous supply, which we purposely wanted. All steers got what mixed clover and timothy hay they wanted.

We have used both calves and yearlings in the tests.



The ground shelled corn lots have outgained and outdressed the corn-and-cob meal and the corn-and-added-cob meal lots of cattle. They did not yield carcasses that had much advantage in carcass grades.

When we summarized the results of the tests on the basis of pounds of carcasses on the rail we found the cobs in the corn-and-cob meals had half as much feeding value as their weight in ground shelled corn. The cobs we added were worth as much as the normal amount of cobs. Perhaps we have not reached the point of diminishing returns in cobs.

The question arises as to whether these results are due to physical conditions or nutritional values. Dr. Burroughs, our nutritionist working with steers in digestion stalls using varying amounts of cobs, gets results indicating parallel values from the cobs as a source of nutrients to our feed lot trials.

During the past 3 years we have used various amounts of soybean oil meal — none, 1, 2, and 3 pounds per steer per day — with ground shelled corn and corn-and-added-cob meal. These results indicate that there is a relationship between quantity of protein and cob utilization, but that the relationship is not as great as some might expect. We think 1 pound of supplement is minimum — probably below minimum — and 2 pounds per steer per day is maximum when soybean-oil meal is used as the supplement. The kind of hay used would doubtless be a factor, too.

Another good question that arose was what would happen in comparing ground shelled corn, corn-and-cob meal, and corn-and-added-cob meal if corn silage were used in the ration.

We have fed 25 pounds of corn silage (half a full feed), 1.5 pounds of soybean-oil meal per steer daily, and what mixed hay the yearling steers wanted. One lot was fed ground shelled corn, one lot corn-and-cob meal, and the third lot corn-and-added-cob meal made by adding 20 pounds of ground cobs to 100 pounds of ground ear corn.

The results of this comparison have given us cob replacement values parallel to those obtained where silage was not a part of the ration.

Several years ago we conducted a series of tests at the university using yearling cattle and feeding periods of about 7 months.

Lot 1 was full-fed corn-and-cob meal, 1.5 pounds of supplement, corn silage, and what hay the steers wanted. Lot 2 was fed three-fourths as much corn-and-cob meal as lot 1 ate, the same amount of supplement, and what hay they wanted.

Lot 3 was fed one-half as much corn-and-cob meal, supplement, silage, and what hay they wanted.

The cattle fed three-fourths of a full feed of corn gave results that would certainly interest many cattle feeders. The lot getting one-half a full feed were a little too slow in gains to interest most folks.

Holding back on the corn content of the ration and feeding more hay changed the ratio of acres of corn and hay fed from about 4 to 1 to 1.5 to 1.



We have already stated that the territory represented here is extensive grass territory and therefore breeding and grazing territory.

Let me tell you the results of a series of tests comparing choice, medium, and common feeder steers fed the same rations.

When we timed the tests to close in April or May we got nearly twice as much return per bushel of corn fed to the common steers as to the choice ones.

When we timed the test for August the common steers again gave us a larger return per bushel of corn but not as much advantage as when marketed in the spring months.

Certainly the Corn Belt feeders who want to follow a 5-month feeding period and market in late winter or spring have not found the choice grades of feeders the most profitable.

Let me give you one of the big reasons why this is true. In our tests the choice steers that we used cost us nearly twice as much, 94-percent more per steer, than the common ones. No question which grade the producer should produce.

During the past 8 years we have had some experiences with an experiment in crossbreeding Hereford and Angus that may interest you as producers. We started with 28 Hereford heifers and 28 Angus heifers. Fourteen of each were taken to make herd A and the other half of each group made up herd B.

Herd A was bred to an Angus bull the first year and to a Hereford bull the second year, while herd B was bred to this same Hereford bull the first year and to the Angus bull the second year. Theoretically, but not actually, each cow at the end of 2 years had given us a purebred calf and a crossbred calf.

Both bulls were replaced at the end of 2 years and the same procedure followed. We have had eight crops of calves from the cow herd.

There is a hybrid vigor obtained by crossing the Herefords and Angus that is noticeable at birth, and I think remains in evidence through to the time of marketing.

The eighth and last crop of calves is on pasture at present, so I cannot give you a complete summary.

Some things have come out up to the present that have interested us.

It has been impossible for us to see exactly what an 18-month bull would look like when mature. Our first Hereford bull got bigger than we expected. We would call him a big ton bull comparing with a 1,700 pound Angus bull. The calves from the larger bull did enough better to indicate size was an important factor. For the second pair of bulls we got a ton Angus bull and an 1,800-pound Hereford bull.

The ton Angus bull put 70 pounds per calf to the 800 pound weight on the calves he sired from the same cows as compared with calves from the 1,700-pound Angus bull. The smaller Hereford bull's calves were 50 pounds lighter to the 800-pound weight as compared with the large Hereford bull we used the first 2 years.



Inasmuch as the larger Angus bull's calves were increasing in comparative weight the same 2 years as the smaller Hereford bull's calves were decreasing in relative gains, it would seem that size was one of the important factors contributing to the performance.

Our experiences with the project indicate that there is a great deal of possibility for increasing weight of offspring by paying more attention to size in breeding animals. Another way of stating the same situation is by asking the question whether some of our breeds of beef cattle are not heading in the wrong direction when the smaller type are given undue prominence in our thinking.

I would like to summarize by again telling you that I am certain that there is no one system that is best for all to follow.

What the crop situation is on the farm involved, and the size of the farm, certainly are fundamental factors to be used in determining the program.

I am certain that we should not be misled into thinking that the amount of the blood of champions is as important in a herd of commercial cows as some think. Neither should we feel that the ration that makes the most rapid gains is the most profitable ration to use. Topping the market is sometimes an expensive thrill.

A program of using good big females and rations that give good performance and fit our farm picture, and a timing that fits as best we can both producer and market will be a pretty safe program in our livestock production efforts in this or any other territory.